

Odontotermes bangalorensis, Holmg.

Holmg. Entl. Mem., V, 151-152.

This species has been found at Hadagalli, nibbling roots of *cholam*.

Odontotermes obesus, Ramb.

Holmg., Entl. Mem., V, 146-149.

This species has been definitely noted from Quilandy (Malabar), damaging young coconut palms; Coimbatore, galleries on tree-trunks; Hadagalli, nibbling bark of small tree; Mysore City, on bark of *Grevillea*; Lyallpur, on tree trunk; Bankura, eating sugarcane setts.

PROTERMITIDÆ.

Stylotermes fletcheri, Holmg.

Holmg., Entl. Mem., V, 142-143.

This species was found in the Shevarøys, burrowing in the rotten interior and in sound wood of a mango tree.

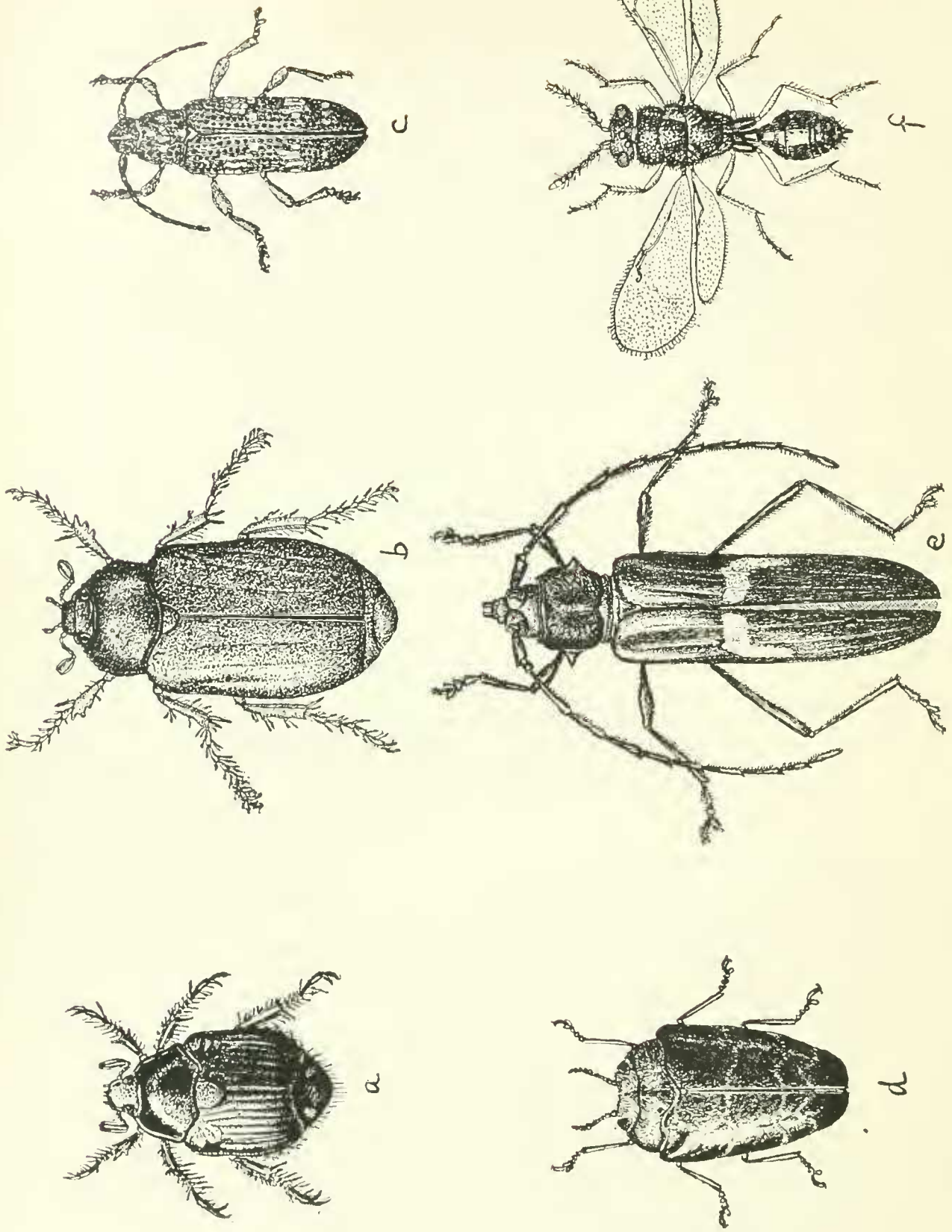
Hodotermes viarum, Koenig.*Hodotermes koenigi*, Holmgren, Entl. Mem., V, 138.

This species occurs commonly at Coimbatore and sometimes does some damage to grass lawns by cutting off grass.

3.—SOME INSECTS RECENTLY NOTED AS INJURIOUS IN SOUTH INDIA.

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The latest connected record of the injurious insects of South India is the volume on *Some South Indian Insects* by Mr. Fletcher. In the preface to that publication the author writes thus:—"The list of crop-pests is not complete, and it must be clearly understood that it cannot be complete for many years, if ever. Every month new pests come to light, many of them altogether unknown even by name, and our knowledge of old pests is augmented." These words are only too true; for, since the publication of that volume in 1914, several new insects of economic importance have been noted in South India within the last three or four years.



South Indian Insects; a, *Popillia chlorion* × 2½; b, *Rhisotrogus rufus* × 2½; c, *Apomecyna perotteti* × 2½; d, *Trachys bicolor* × 7; e, *Chelidonium cinctum* × 2½; f, *Eurytoma indi* × 13.

In this paper I have attempted to bring together a very brief account of these recently noted forms. Of course, casual references and stray notes of some of these have appeared in reports and departmental papers but nowhere in a connected and complete manner.

The list is neither complete (it can never be complete for many a long time to come), nor does it profess to give any detailed accounts of the different forms. It is more or less a skeleton list forming a sort of supplement to Mr. Fletcher's valuable volume, and the only reason for its publication is to bring together our scattered and necessarily incomplete knowledge of these forms into a connected shape as a sort of nucleus for future work. There is little doubt that, as our knowledge of these insects increases, it may be possible to bring out further papers containing detailed information on each of these forms. In the list, I have included not only those insects that have been recently noted as of some economic importance, but also others, which though already known and recorded, have not been sufficiently recognized as injurious in South India. The forms are arranged under their natural Orders and with regard to many which have not yet been scientifically identified, I have given popular names by means of which each might be recognized until it gets its scientific baptism.

HYMENOPTERA.

Eurytoma indi, Girault¹. (Plate 9, fig. *f.*)—This is a small wasp of the family Eurytomidæ included in the large group of Chalcidid wasps. Most of the insects of this group are parasitic on other insects and as such beneficial in many cases to the cultivator. This species, however, seems to be one among the exceptions. The adult insect is black with the abdomen shining; measures 2.25 mm. It breeds inside seeds of *dhaincha* (*Sesbania aegyptiaca*) pods and destroys the seed. The insect was noted on the Coimbatore farm three years ago doing serious damage to a crop of *dhaincha* left for seed. A smaller insect, also a Chalcidid, *Megastigmus indi*, Gir., has been noted along with it and is believed to be a parasite on the seed-borer.

In general form and habits this borer appears very closely allied to the American 'Clover-seed Chalcid' (*Bruchophagus funebris*, How).²

Philanthus ramakrishnae, Turner. (Plate 11, fig. 1.)—This fossorial wasp is one of the many insect enemies of the honey-bee (*Apis indica*) in the Hills of South India. I first noted this on the Bababudin Hills in

¹ The name given to this insect in the *Report of the 2nd Entomological Conference, Pusa*, (p. 73), is a mistake.

² See *Monthly Bulletin Calif. St. Com. Hort.*, Vol. II, p. 696 (1913).

Mysore at an elevation of 4,000 feet. It has latterly been noted on the Palnis also. Numbers of the honey-bee are carried off by this wasp and stored in nests made in hard banks at the sides of hill roads. There is no doubt that hives of honey-bees are depopulated in this way by this insect. Interesting accounts of how species of these wasps hunt bees and store them, will be found in Fabre's interesting works.

Xylocopa tenuiscapa, Westw. In buildings where the roofing materials are of bamboo or weak and unseasoned wood this carpenter-bee causes considerable damage. The rafters and beams are riddled with holes inside which the insect breeds. Swarms of these insects are found hovering about the building all day long with their characteristic disturbing noise. I have collected the Meloid beetle *Cissites debyi* in the galleries made by this bee. This latter insect is believed to be predaceous on the larvæ of the carpenter-bee.

Among other Hymenoptera already recorded as injurious, mention may be made of two well-known ants—*Ecophylla smaragdina* and *Camponotus compressus*. The former was recently found bad on the crowns of coconut trees in South Kanara. It is found very hard to get rid of the nests on these trees; tree-climbers often suffer very much. The latter is chiefly found guilty of spreading colonies of scale-insects from tree to tree; this has been noted especially in the case of two Coccids on the Coimbatore farm, viz., *Pulvinaria maxima*, Gr., and *Anomalococcus indicus*, Gr.

COLEOPTERA.

Holotrichia sp. (Plate 9, fig. b.)* This is a fairly big cockchafer beetle, chocolate-brown in colour. Mr. Arrow of the British Museum, to whom it was sent, says that the species is new to the Museum. Thousands of these emerge from the soil at the hill-sides soon after the first summer rains on the Nilgiris. The grubs are generally found active from September to November. In certain years these do considerable damage to young cinchona seedlings. Thousands of the adults may be caught at lights in May—June. Another known species, *H. repetita*, is occasionally found with this species, but not in such numbers, on the Nilgiris.

Opillia chlorion, Newm. (Plate 9, fig. a.) This small pretty green insect is found in company with the big cockchafer noted above, and the grubs too have the same habits, but are smaller in size. Cockchafer grubs of sorts have now and then been observed also under *cholam* plants and other garden shrubs on the Coimbatore farm.

* Since described in *Ann. Mag. Nat. Hist.*, July 1899, p. 24, by Mr. Arrow as *Rhizotrogus rufus*.

Anadastus sp. Within the past three or four years the *tenai* crop (*Setaria italica*) on the Coimbatore farm has been found subject to the attacks of a Languriad borer. The nature of the damage and the external symptoms of the crop are similar to those caused by ordinary borers—the fading and gradual death of the shoots and ears, and death of the plant. The beetle appears to be a species of *Anadastus*; another Erotylid which I have noted as a borer till now is *Fatua longicornis*, W., breeding on dry and rotting *Euphorbia antiquorum* plants (See Fletcher, p. 290). The life-history of this *tenai* beetle has recently been worked out by my Assistant, Mr. P. V. Isaac.* The eggs are thrust into the stem at the nodes singly, a few inches above the ground level. The grub feeds from inside and pupates in the hollow. The beetle is small in size, about 6 mm. in length, and red and blue in colour.

Anthrenus pimpinella, Fab., var. (Fig. 76 in Fletcher's book.) Silk and woollen goods are found subject to the attacks of a small Dermestid in South India. The beetle is very small, oval in shape and dark brown in colour with white patches on the elytra. The small dark hairy larva is found feeding on silk cocoons, woollens, brushes, etc. *Anthrenus fasciatus* has been reported more than once from Army clothing depôts.

Trachys bicolor. (Plate 9, fig. d.) The *palas* tree (*Butea frondosa*) is subject to the serious attacks of this Buprestid leaf-miner. In the months from December to March, when fresh leaves are put out by the bushes, every leaf is found mined and blistered by this borer. The beetle is comparatively small in size and dark bluish in colour. It is very common in South Malabar.

A species of *Trachys* is referred to as a pest of jute in Bengal (vide *Report of Second Entomological Meeting*, p. 134) but I do not know which species this one is.

Wire-Worms. Reports of Elaterid grubs attacking potatoes in the Hills have been recently received. The actual species concerned has yet to be bred out.

The *Moringa* stem-borer. The larva, which in this case is a longicorn borer, attacks the *moringa* tree (*Moringa pterygosperma*). The beetle is a typical Lamiad appearing more or less like one of the species of *Monohammus*. It is about 19 mm. long and greyish-brown in colour. The insect is found occasionally serious. The life-history has recently been worked out by my Assistant Mr. T. V. Subramania Ayyar. [See paper No. 66 of these Proceedings.]

* See also Mr. Isaac's paper (No. 65 of these Proceedings).

Chelidonium cinctum, Guer. (Plate 9, fig. *e*.) Mr. Anstead, the Deputy Director of Agriculture for Planting Districts, has recently found this insect attacking *Citrus* trees in the Mysore uplands. Probably it is similar in habits to the other well-known orange-borer of Coorg, *Chloridolum alcmene*. It may be the same or similar to one noted in Coorg by Fletcher (See *Rept. of Second Entomological Meeting*, p. 211).

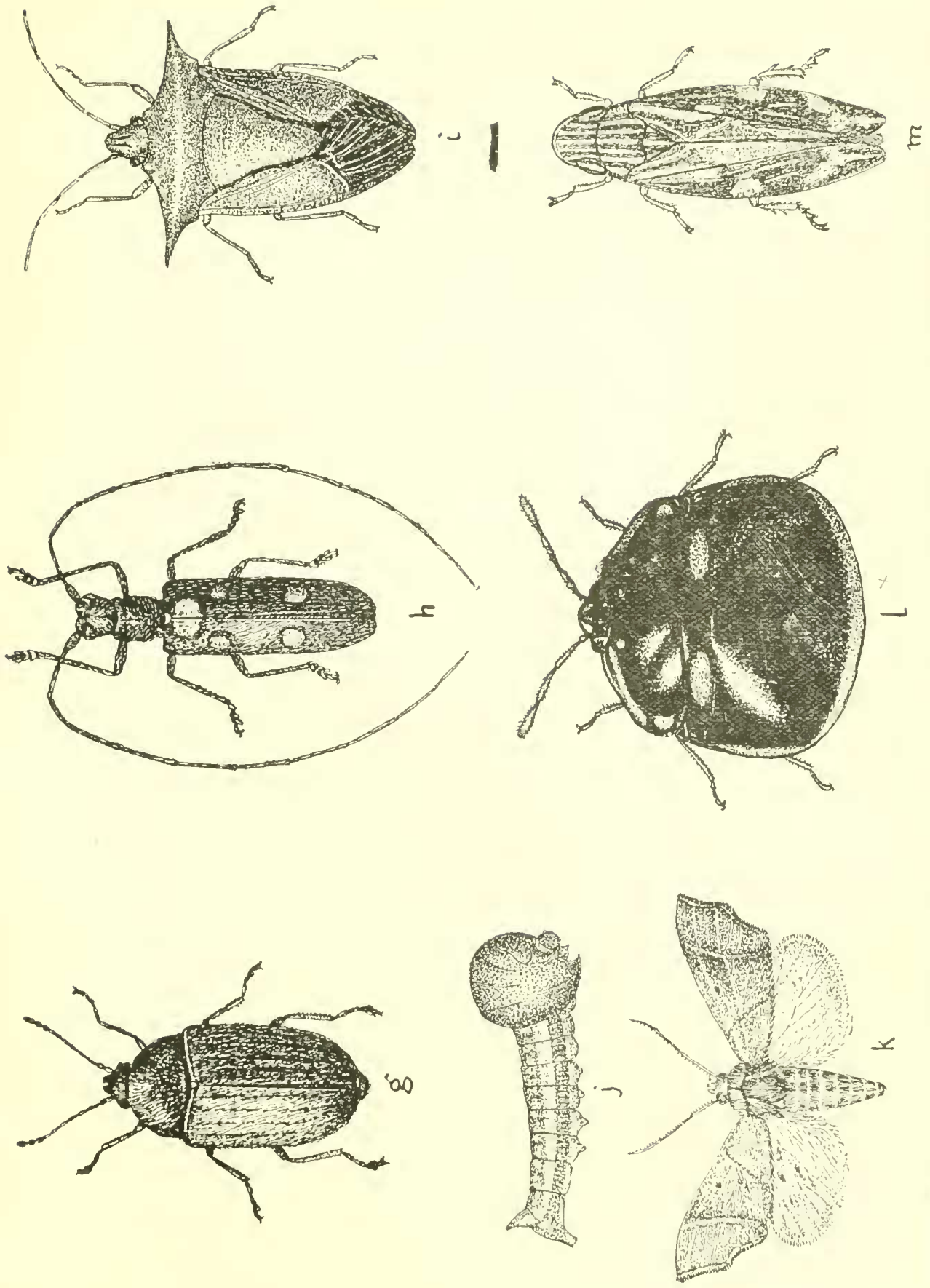
The *Morinda* shoot borer. This insect is a very small pale-brown beetle, the whitish grubs of which are found attacking the growing terminal shoots of *Morinda tinctoria* plants. The presence of the pest is easily seen by the faded and drooping appearance of the young distal shoots; the latter turn black in course of time and drop down. The larva is a minute pale white grub; the pupa is also found in the same place. The beetle appears to be a Scolytid, having an oval prothorax and small brownish head tucked underneath the thorax.

The *Kolingi* pod beetle. (Plate 10, fig. *g*.) As a green-manure plant in wet areas, the *kolingi* or wild indigo (*Tephrosia purpurea*) is held in high esteem in South India. Seeds are regularly collected and even sold by the Department. The growing pods of this bush are attacked by a small beetle borer—an Anthribid, probably a species of *Aræcerus*—which eats away the seeds and makes the pod empty. The pupa is also found inside the attacked pod. The insect is found in Tinnevely, Tanjore and South Arcot districts. The adult beetle is very small in size, 2.5 mm. long, pale greyish in colour and is almost similar in appearance to the *kolingi* seed. It is a very active creature.

Longitarsus nigripennis, Motsch. The grub of this small flea-beetle contributes a share to what is called the *Pollu* disease of pepper in North Malabar. The adult beetle is a very active small creature with the head and thorax ochraceous and the elytra bluish-black; the hind femora are extraordinarily thick. Eggs are thrust singly just under the rind of the growing pepper-berry; the small cream-white grub feeds on the inner contents of the berry and makes it hollow—this hollowing of the pepper-berry, to whatever cause it is due, being called the *Pollu* disease of pepper. The mature grub drops down into the soil and pupates underground enclosed in an earthen cell. I am reading a separate paper on this insect [See page 925].

There are also other species of flea-beetles which are often noted as sporadic local pests causing a certain amount of damage to crops in certain seasons. Of these the following are the chief:—

The *Bael* flea-beetle. This dark shining beetle has been noted in Coimbatore and Kollegal doing damage to the foliage of bael, *Ægle marmelos*. They feed together in numbers and cause considerable



South Indian Insect Pests ; g. *Kolingi* pod beetle $\times 13$; h. *Olececamptus bilobus $\times 2\frac{1}{2}$; i. *Vitelus orientalis $\times 2\frac{1}{2}$; j. *Careu subtilis*, larva and moth $\times \frac{1}{3}$; k. *Coptosoma nasire* $\times 13$; l. *Clovia lineaticollis* $\times 5$.**

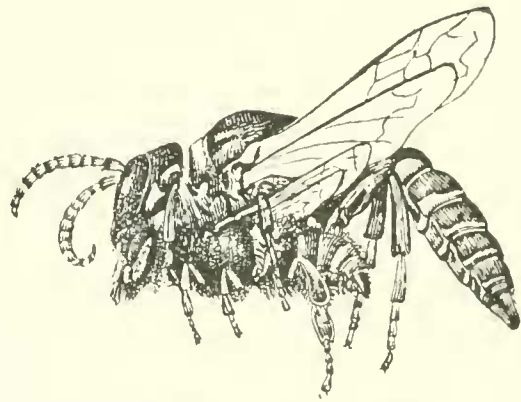


Fig. 1.—*Philanthus ramakrishna*, Turner, $\times 2\frac{1}{2}$.
The lower figure shows a specimen in flight, carrying off a honey-bee.

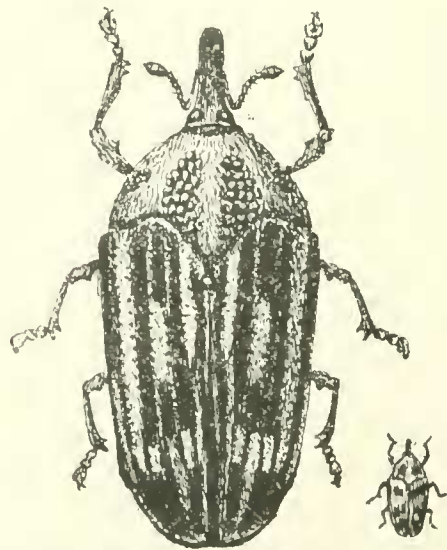


Fig. 2.—*Alcides pictus*, natural size
and magnified ($\times 5$).

damage within a short period of time. It does not appear to be *Clitea picta*, Baly.

The *Panivaragu* flea-beetle. This small flea-beetle appears to be a specific pest of the millet *Panicum miliare* in Coimbatore; the larvæ bore into the plant stem and often cause "dead hearts."

The Radish flea-beetle. This small very active bright-blue insect is found doing serious damage often to cabbage, radish and other cruciferous plants. It is also occasionally found on other irrigated crops but the insect is very partial to Cruciferae. It appears to be similar to a flea-beetle which I remember to have collected on brinjal in Muzaffarpur in October 1904.

Other flea-beetles are those found on sann hemp, castor, etc.

Green potato leaf-beetle. A shining green Galerucine beetle is found on the Nilgiris feeding on potato-leaves in some numbers. Similar beetles have also been noted on sweet-potato in Tinnevely and other places—but not as bad pests.

Several species of *Myloccerus* are now and then noted on various cultivated crops but only a few of these species ever do any appreciable damage and even this is not of common occurrence. The following species may however be watched.

Myloccerus subfasciatus, Guer. This species is a grey insect commonly found on a variety of plants. Noted on brinjal, potatoes, apple, etc. Sometimes the insect causes serious damage to brinjal foliage in the Plains.

Myloccerus discolor. This weevil is the common greyish-brown species found on a variety of crops all over South India. It has been noted on maize, *ragi*, *cholam*, etc. In bad seasons and when the plants are young this weevil does appreciable damage to the crop, although in normal years the work of the insect is negligible.

Myloccerus dentifer, F. This pale-greyish beetle is occasionally found defoliating *tenai* (*Setaria*). *cumbu*, etc., in South Arcot.

Myloccerus viridanus. This pretty green species is generally found on groundnut, castor, *Hibiscus esculentus*, etc. Stebbing notes this insect as a bad pest on teak in the Walayar forests. With this species is often found a smaller species, *M. pretiosus*, F.

Corresponding perhaps to the species of *Myloccerus* in the Plains we have one or two species of *Sympiezomias* on coffee, cinchona, etc., in the Hills. The species noted so far are *S. frater*, *S. cretaceus*, and *S. decipiens*.

Alcides pictus. (Pl. 11, f. 2). This species of *Alcides*, which is not unknown in South India, has within the last two or three years taken to feed on *lablab*. The grubs and pupæ are found infesting the main vines and some damage is done to the plant.

Conarthrus jansoni, Woll. In the coastal tracts of Malabar and Cochin I have noted a small shining black beetle boring in numbers into the bamboo framework of sheds and fences near houses. The split bamboo pieces are badly tunneled in some cases. Fletcher has noted a beetle of similar habits in Ceylon (*Myocalandra exarata*, Boh.), but I find that this insect is not the same as the Ceylonese one.

The Jak-fruit weevil (Pl. 12, f. 1). In Malabar and the Mysore uplands young fruits of jak trees are sometimes very badly damaged by this insect. The weevil is a very small one, measuring about 6 mm. in length, and is pale-greyish-brown in colour. The snout is prominent. Hundreds of the small cream-white grubs are found in the riddling healthy tender fruits and as a consequence the fruits shrivel up and drop down. Dr. Marshall, to whom I sent specimens some time back, tells me that the insect belongs probably to a new genus and that he would describe the same soon.

Calandra rugicollis, Fst. This small weevil has been noted as a pest of *sal* (*Shorea robusta*) seedlings in Ganjam. In appearance it is more or less like the ordinary rice *Calandra* but slightly bigger. Fallen *sal* seeds contain the grubs and pupæ of this weevil. This was noted by a nephew of mine who is a Forest Officer. It appears closely allied to the acorn weevil (*C. sculpturata*, Gyll.) mentioned by Stebbing, and is perhaps the same as the undermined '*Sal* weevil' referred to by Stebbing on page 450 of his book on Indian Forest Insects.

Rubber Scolytid.* (Pl. 12, f. 2). A small reddish-brown Scolytid beetle (very likely a species of *Xyleborus*) was recently sent up from a rubber estate in Cochin as doing damage to *Hevea* bark.

Rubber Platypodid. (Pl. 12, f. 3). This was reported from Travancore as doing the same kind of damage to rubber bark. The insect from its structure appears to be a species of Platypodid.

Coconut Scolytid. A small Scolytid, said to damage coconut stems, has been received two or three times from different parts of South India.

The real bionomics of these Scolytids have to be studied to see whether they are the cause or the effect in these different cases, since in the case of rubber a fungus disease is often found mixed up.

Two weevils—Melon weevil (*Acythopeus citrulli*, Marsh) and a small Apion (*Apion amplum*, Fst.) may also be added to the list of weevils. The former was noted in Cuddapah and Bellary inside melons, and the latter has been collected on *Anacardium* fruits in Malabar and also bred in green-gram pods in Coimbatore.

* Since named by Col. Winn Sampson as *Xyleborus biporus*, n. sp.

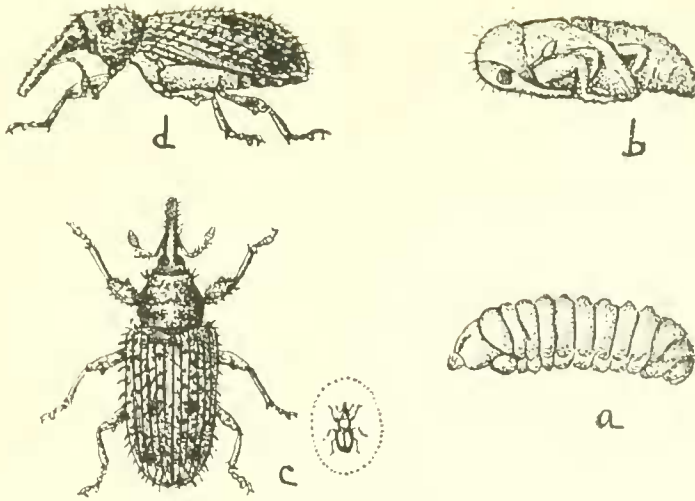


Fig. 1.—Jak Weevil ; *a*, larva $\times 8$; *b*, pupa $\times 8$; *c*, beetle, dorsal view, natural size and enlarged ($\times 8$) ; *d*, beetle, side-view, $\times 8$.

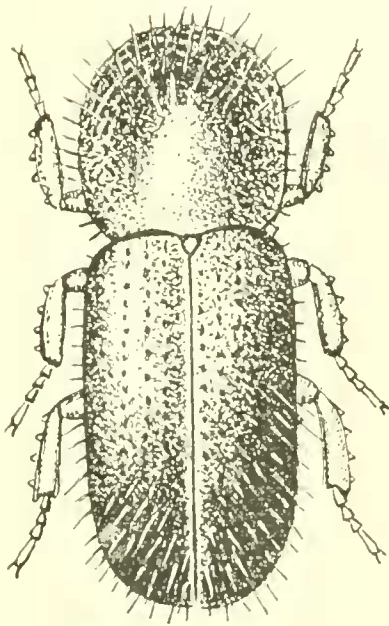


Fig. 2.—Rubber Scolytid ($\times 36$).

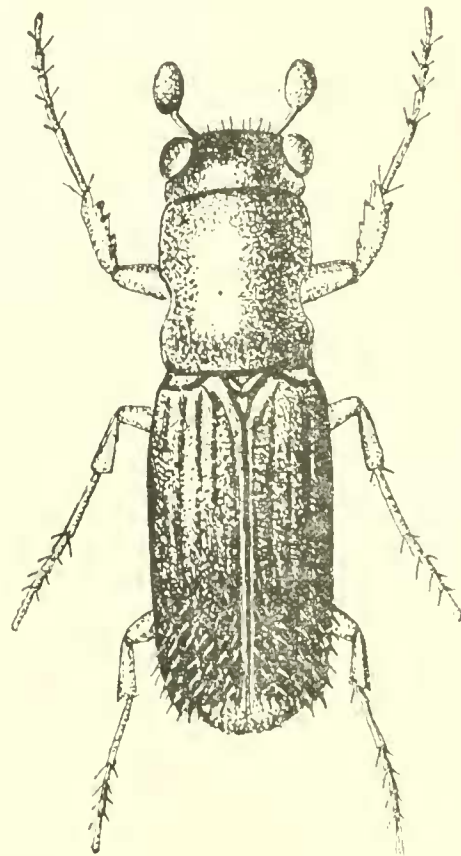


Fig. 3.—Rubber Platypodid ($\times 16$).

